NOTE XXIII.

ON NEW AND LITTLE-KNOWN FROGS FROM THE MALAYAN ARCHIPELAGO.

BY

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I. *On the supposed synonymy of Bufo cruentatus and Bufo borbonicus.*

Being occupied with an examination of the frogs from the Malayan Archipelago in our Collections, the type-specimens of *Bufo cruentatus* (Schleg.) Tschudi and *Hylaplesia borbonica* Kuhl & v. Hass. came under my hand, and I was not a little surprised to see that the later authors believe those two species to be identical.

Our specimens of *B. cruentatus* quite agree with the description given by Duméril and Bibron, but those of *B. borbonicus* (Peters has first pointed out that *Hylaplesia* is a true Bufonid) differ by so striking characters, that this species is recognised at first sight and the confusion of both species must certainly be imputed to the incomplete description of Boie and to the rarity of the specimens. However it is very strange that Peters, who first pointed out some differences between *B. cruentatus* and *B. borbonicus* (Monatsb. Berlin. Acad. 1863, p. 81), afterwards declared that they must be taken for the same (loc. cit. 1867, p. 34).

Therefore it will not be superfluous to give a description of our type-specimens.

1. *Bufo cruentatus.*

Bufo cruentatus (Schleg.) Tschudi, Classif. der Batrach. p. 52 and 88; Dum. & Bibr. Erpétol. génér. Vol. VIII, p. 665; Günth., Catal. Brit. Mus. 1rst Edit. p. 62.

Bufo borbonicus Boul., Cat. Brit. Mus. 2nd Edit. p. 286.

Habit Slender. Head short, triangular, with the snout obliquely truncate, canthus rostralis angular; loreal region vertical, slightly concave, interorbital space broader than the upper eyelid; a parotoid on each side from the eye to the shoulder, sometimes divided in two parts; tympanum rather indistinct, small. Fingers free, the first shorter than the second; toes webbed, the membrane reaching the tip of the first and second toe, but only the first articulation of the others; disks small. Limbs slender; the hind limb being carried forwards along the body, the heel reaches the tip of the snout. (In a young specimen, otherwise quite agreeing with the others, the heel extends only to the eye). Skin covered with small tubercles above; underside smooth or granular.

Colour: (spirit-specimens) above brown, variegated with dark spots and white patches; beneath rufous.

Length from snout to vent 33 m. m. — Several specimens from Java, collected by Kuhl & van Hasselt and by Boie & Macklot.

2. *Bufo borbonicus.*

Hylaplesia borbonica Kuhl & v. Hass., Isis 1827, p. 294; Tschudi, Classif. d. Batrach. p. 28 and 70; Peters, Monatsb. Berlin. Acad. 1863, p. 81.

Habit slender. Head pyramidal, with the snout obliquely truncate; canthus rostralis angular; loreal region

slightly concave; interorbital space as broad as the upper eyelid; tympanum distinct, small, about one fourth the diameter of the eye; a parotoid from the eye to the shoulder continuous or divided in two or three parts. Fingers free, the first shorter than the second; disks very small. Toes webbed, the membrane reaching the disks of the first and second toe, the first articulation of the others, but extending with a fringe to their tips; disks of the toes a little larger than those of the fingers. Hind limb very long, being extended forwards along the body, the heel reaches far beyond the snout; subarticular tubercles distinct; a narrow tarsal fold. Upper parts covered with warts and tubercles; skin at the ventral side and around the vent granular.

Colour: (spirit-specimens) above yellowish-brown, variegated with dark; large dark-brown spots, light-edged and with a withe centre, along the median line of the back and on the limbs; a dark band across the head between the frontal edges of the eyes; beneath colourless.

Length from snout to vent 42 m.m.

Two specimens from Java, collected by Boie & Macklot, two from Sumatra by S. Müller.

The characteristics, by which *B. borbonicus* differs from *B. cruentatus*, are: its longer hind limbs, the limb being extended forwards along the body, the snout marks nearly the half of the tibia; its narrower head, the interorbital distance being not broader than the eyelid; its distinct tympanum; its colour. *Bufo borbonicus* agrees with *B. leptopus* in its slender hind limbs; but this species is distinguished by having the first finger as long as the second; by wanting the parotoids etc.

II. *On Theloderma leprosa.*

Tschudi in his Classification der Batrachier (Mém. Soc. Scienc. Nat. Neuchatel T. II, 1839, p. 32 and 73) describes under the group of the Hylidae a genus *Theloderma*, based upon a specimen, which he met with in the Ley-

den Museum under the name of *Hyla leprosa* and which was collected in Sumatra by S. Müller. This genus, especially characterised by the large pointed tubercles, covering the skin of the upper parts, is described by him in the following way: »Caput permagnum, trigonum; rostrum triangulatum; nares in apice canthi rostralis, dentes palatinos perpaucos (utrinque tres); linguam integerrimam pone apice longiusculo; digitos in disco magno globuloso terminatos, plantas palmatas; cutem asperrimam, multis trigonis et oblongis papillis, acutis extrematibus, tectam; tympanum latentem". Though this description is quoted by Duméril & Bibron, though Schlegel on several places has mentioned and figured *Hyla leprosa* (vide infra), and the genus *Theloderma* is also maintained by Cope in his system of Batrachia, it seems to have been quite overlooked by both the authors of the Catalogue of the British Museum, as I cannot find any mentioning of it neither by Günther nor by Boulanger.

Our specimen may be described as follows:

3. *Theloderma leprosa.*

Theloderma leposa Tschudi, Classif. Batrach. 1839, p. 32 and 73; Dum. & Bibr., Erpét. Géner. Vol. VIII, 1841, p. 499; Cope, Sketch of prim. groups of Batr. sal., Nat. Hist. Rev. 1865 (fide Hoffmann, Bronn's Class. u. Ordn. Amphibien).

Hyla leprosa Schleg., Abbild. 1839—44, p. 105; idem, De Dierentuin van Nat. Art. Mag. Amsterdam 1872, Reptil. p. 57 with woodcut; idem, Handl. der Dierk. Vol. II, pag. 55, pl. IV, fig. 68.

Head broad, depressed, with the snout oval, once and a third as long as the diameter of the eye; loreal region oblique; nostrils prominent, near the tip of the snout; interorbital space a little broader than the upper eyelid, tympanum large, two thirds the diameter of the orbit. Tongue heart-shaped, not notched but with a median flap behind; vomerine teeth in two small, sligthly curved

groups, commencing from the inner front edge of the choanae. Fingers free, with very large disks, first finger shorter than the second, its disk also smaller than that of the others; toes broadly webbed, the membrane extending to the disks, except at the fourth toe, whose distal phalanx is only edged by a narrow fringe of the web; disks somewhat smaller than those of the fore-limb. The hind limb being carried forwards along the body, the heel hardly reaching the tip of the snout. Skin of the upper parts rough, with very prominent pyramidal tubercles and warts; underside granulate.

Colour: (spirit-specimen) above light brown, variegated with dark on the limbs; underside yellowish, with brown patches on belly and limbs.

Length from snout to vent 63 m.m.

One adult specimen from Sumatra. (The young one, mentioned by Tschudi, does not belong to this species but I think it should be referred to the genus *Nectophryne*).

III. *New species.*

4. *Hyla amboinensis* n. s.

Head broad, with the snout rounded, once and a half as long as the diameter of the eye; loreal region oblique, rounded; canthus rostralis indistinct; nostrils near the tip of the snout; eyes prominent; the interorbital space a little broader than the upper eyelid; tympanum distinct, about half the diameter of the eye; a strong fold from the eye above the tympanum to the shoulder. Tongue oval, slightly notched and free behind; vomerine teeth in two small groups in the middle between the choanae. Fingers broadly webbed, the membrane reaching the disks at the outerside of the second and third, at the innerside of the fourth finger; toes entirely webbed; disks nearly as large as the tympanum. Hind limbs slender, being carried forwards along the body, the heel reaches beyond the tip of

the snout. Skin with scattered, small tubercles on the back and around the vent; belly and underside of thighs granular; a fold across the breast.

Colour: (spirit-specimens) above greyish-brown, variegated with dark; on the head a rhomboidal spot, with the anterior angle on the snout, the posterior on the nape, the two laterals on the middle of the eyelids; a faint light transverse band behind the head; underside yellowish, with brown dots along the border of the mouth.

Length from snout to vent 55 m.m.

Two specimens, an adult and a young one, from Amboina and one specimen from Misool, collected by Hoedt.

This species seems to agree with the australian *Hyla gracilenta* Pet., in the development of the web between the fingers.

5. *Hyla genimaculata* n. s.

Head nearly as broad as long, depressed, with the snout oval, once and a half the diameter of the eye; canthus rostralis angular; loreal region oblique, slightly concave; interorbital space much broader than the upper eyelid; tympanum distinct, two thirds the diameter of the orbit; an indistinct fold from the eye to the shoulder. Tongue elliptical, free and very slightly nicked behind; teeth on the level of the hind edge of the choanae, in two oblique groups, converging posteriorly. Fingers half-webbed, except the first, who is only webbed at the base; disks of the three external fingers about as large as the tympanum; toes broadly webbed, the membrane reaching the disks at the outerside of the second and third, at the innerside of the fifth toe, but the penultimate phalanx of the first and fourth toe free; disks a little smaller than those of the fingers. Hind limb being carried forwards along the body, the heel reaches beyond the tip of the snout. Skin with small warts above; those around the vent and along the outer edge of forearm and tarsus

larger; belly and underside of thighs granular; a fold across the breast.

Colour: (spirit-specimen) above greyish-brown, with broad transverse bands across the limbs, and dark dots along the borders of the mouth; a light transverse band between the eyes; a white triangular spot from the under margin of the eye to the angle of the mouth; underside yellowish.

Length from snout to vent 43 m.m.

One specimen from Gebeh (Gagie?) collected by Bernstein.

6. *Hyla Bernsteini* n. s.

Head nearly as broad as long, with the snout rounded, a little longer than the diameter of the orbit; nostrils prominent, near the tip of the snout; canthus rostralis distinct, loreal region oblique, slightly concave; interorbital space much broader than the upper eyelid; tympanum indistinct, small, one third the diameter of the eye, surrounded above by an indistinct fold. Tongue heart-shaped, slightly notched behind; vomerine teeth in two distant, small, concave groups near the inner front-edge of the choanae (in one specimen the teeth are wanting). Fingers broadly webbed, the membrane extends to the disk of the second and fourth finger; toes webbed to the disk at the outerside of the second and third, at the innerside of the fifth toe, but the penultimate phalanx of the first and fourth toe free; disks of fingers and toes (except the first) about as large as the tympanum. Hind limb being carried forwards along the body, the heel reaches the tip of the snout. Skin smooth above, on the sides of the body with some scattered warts; underside granular except the chin; a prominent granule on each side of the symphysis pubis.

Colour: (spirit-specimens) above greyish blue, marbled with black and white dots; hinderside of thigh and in-

nerside of tarsus blackish; a white spot from the inferior margin of the eye to the angle of the mouth.

Length from snout to vent 37 m.m.

Two specimens from Salawattie and Gebeh collected by Bernstein.

7. *Hyla aruensis* n. s.

Snout oval, a little longer than the diameter of the eye; canthus rostralis distinct; loreal region oblique, slightly concave; nostrils near the tip of the snout; interorbital space about twice as broad as the upper eyelid; tympanum rather indistinct, somewhat more than one half the diameter of the eye; an indistinct fold along its upper border. Tongue oval, slightly notched behind; vomerine teeth in two oblique divergent groups between the choanae. The three outer fingers for two thirds webbed; toes webbed till the disks, except the fourth; disks about as large as the tympanum. Hind limb being carried forwards along the body, the heel reaches beyond the tip of the snout. Skin smooth above, belly and underside of thighs granulate.

Colour: (spirit-specimens) above uniformly blue, underside yellowish; a white streak along the outer edge of the fore-arm and the under-leg.

Length from snout to vent 42 m.m.

Two specimens from the Aroe-Islands collected by von Rosenberg, one from Misool by Hoedt.

Closely allied to *H. dolichopsis* Cope, who however differs from our species by its distinct, strong fold from the eye to the shoulder; by the transverse position of the vomerine teeth and choanae; by the areolate structure of the skin on the sides of the body; and by its characteristic coloration.

8. *Callula frontifasciata* n. s.

Head depressed, nearly as broad as long; snout obtuse triangular, as long as the diameter of the eye; canthus rostralis rounded; loreal region vertical, slightly concave; tympanum rather indistinct, very small; interorbital space much broader than the upper eyelid; eyes prominent. Palatine ridge indistinct; tongue elliptical, free and entire behind. Fingers free, the tips transversely dilated; first finger about half as long as the second; toes short, webbed at the base; disks as large as those of the fingers. Neither metacarpal nor metatarsal tubercles. Hind limb being carried forwards along the body, the heel reaches the tympanum or the posterior border of the orbit. Skin smooth above, or with small scattered warts; belly granular.

Colour: (spirit-specimens) above greyish, variegated with dark brown; a light transverse band between the eyes; frequently a white longitudinal streak from the eye along each side of the back, and a spot on the loins and a transverse band across the middle of the under-leg of the same colour; underside yellowish, marbled with brown; a white band across the tip of fingers and toes.

Length from snout to vent 25 m.m.

Several specimens from Salawatti, Morotai and Halmaheira, collected by Bernstein.

9. *Rana macularia* var. *javanica* n. s.

In a bottle labelled *Hyla erythraea* and containing some individuals of this species from Java, collected by S. Müller, I found moreover several specimens of a small frog, entirely differing from *H. erythraea*, which certainly do not belong to that species. They agree in so many points with *Hylorana macularia* from Ceylon, that I do not hesitate to identify them with this species; nevertheless I may consider them as a variety, because they differ from *H.*

macularia in the following characters: tympanum not as large as the eye; first finger hardly extending beyond the second; male with a gland at the base of the arm; size smaller, the length amounting only to $1^1/_2$ inch.

The frog may be described as follows:

Head depressed, with the snout subacuminate, not quite twice as long as the diameter of the orbit; nostrils at some distance from the tip of the snout; canthus rostralis rounded; loreal region concave; inter-orbital space broader than the upper eyelid; tympanum distinct, three fourths the diameter of the eye. Tongue oblong, heart-shaped, deeply notched behind; vomerine teeth in two oblique groups between the choanae, extending beyond the level of their hinder edge. Fingers slender, the second about as long as the first; toes half-webbed; the inner metatarsal tubercle narrow, indistinct, the outer one rather large, prominent; disks of fingers and toes small. The hind limb being carried forwards along the body, the heel reaches the tip of the snout. A narrow glandular fold along the sides of the back; another one from the angle of the shoulder, interrupted on the middle of its length; skin smooth, except below the vent. Male with a large flat gland at the base of the arm.

Colour: (spirit-specimens) above light brown, with dark spots, which more or less conflue on the middle of the back in a longitudinal line, bifurcating at the base of the caudal vertebra; a dark band from the nostril to the loin; hind limbs cross-barred; hinderside of thighs marbled with dark spots. Upper lip and glandular folds white. Beneath yellowish, immaculate or spotted on the breast; an oblique brown streak on the humeral joint.

Length from snout to vent 40 m.m.

Java (S. Müller).